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Habitat Conservation Plan for Phase II of the Paso Robles Development in San Marcos, Hays County, Texas

Prepared for

Carma Paso Robles, LLC

Prepared by

SWCA Environmental Consultants

November 2015

HABITAT CONSERVATION PLAN FOR PHASE II OF THE PASO ROBLES DEVELOPMENT IN SAN MARCOS, HAYS COUNTY, TEXAS

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CONTENTS

FIGURES

TABLES

APPENDICES

1. INTRODUCTION

Carma Paso Robles, LLC (Applicant) seeks authorization under Section 10(a) of the federal Endangered Species Act of 1973, as amended (ESA), for the incidental taking of the endangered golden-cheeked warbler (GCWA) (*Setophaga chrysoparia*).[1] The proposed taking would be incidental to the otherwise lawful development and ongoing use of approximately 376 acres of land known as Phase II of the proposed Paso Robles Development (Subject Property). The Subject Property is located approximately 3.5 miles southwest of the City of San Marcos, west of Interstate Highway 35 (IH 35) and south of McCarty Lane within the City of San Marcos corporate limits in southern Hays County, Texas (Figure 1).

Section 9 of the ESA prohibits *take* of federally endangered wildlife species. The ESA defines *take* as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC 1532(19)). *Harm* is defined by U.S. Fish and Wildlife Service (Service) regulations as "an act which actually kills or injures wildlife and may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding or sheltering" (50 Code of Federal Regulations [CFR] 17.3). Section 10(a)(1)(B) of the ESA authorizes the Service to issue permits allowing take that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity."

Section 10(a)(2)(A) of the ESA provides that the Service shall issue an incidental take permit if the applicant meets several substantive criteria, including that the applicant submit a conservation plan that specifies: (1) the impact that will likely result from the taking; (2) the steps the applicant will take to minimize and mitigate the impacts and the funding available to implement those steps; (3) the alternative actions to the taking that were considered and the reasons the alternatives were not chosen; and (4) other measures that the Service may require as necessary or appropriate for purposes of the conservation plan. The Service's *Habitat Conservation Planning and Incidental Take Permit Processing Handbook* (HCP Handbook) also provides guidance on the elements of a habitat conservation plan (Service and National Marine Fisheries Service [NMFS] 1996).

This habitat conservation plan (HCP) supports an application for an ESA Section 10(a)(1)(B) incidental take permit (ITP) from the Service authorizing the taking of the GCWA from otherwise lawful land development activities conducted within the Subject Property.

[1] The North American Checklist Committee of the American Ornithologist's Union (AOU) published a change to the scientific name of the GCWA in the 52nd Supplement to the AOU Checklist of North American Birds (Chesser et al. 2011). The scientific name for the GCWA was changed from *Dendroica chrysoparia* to *Setophaga chrysoparia*.

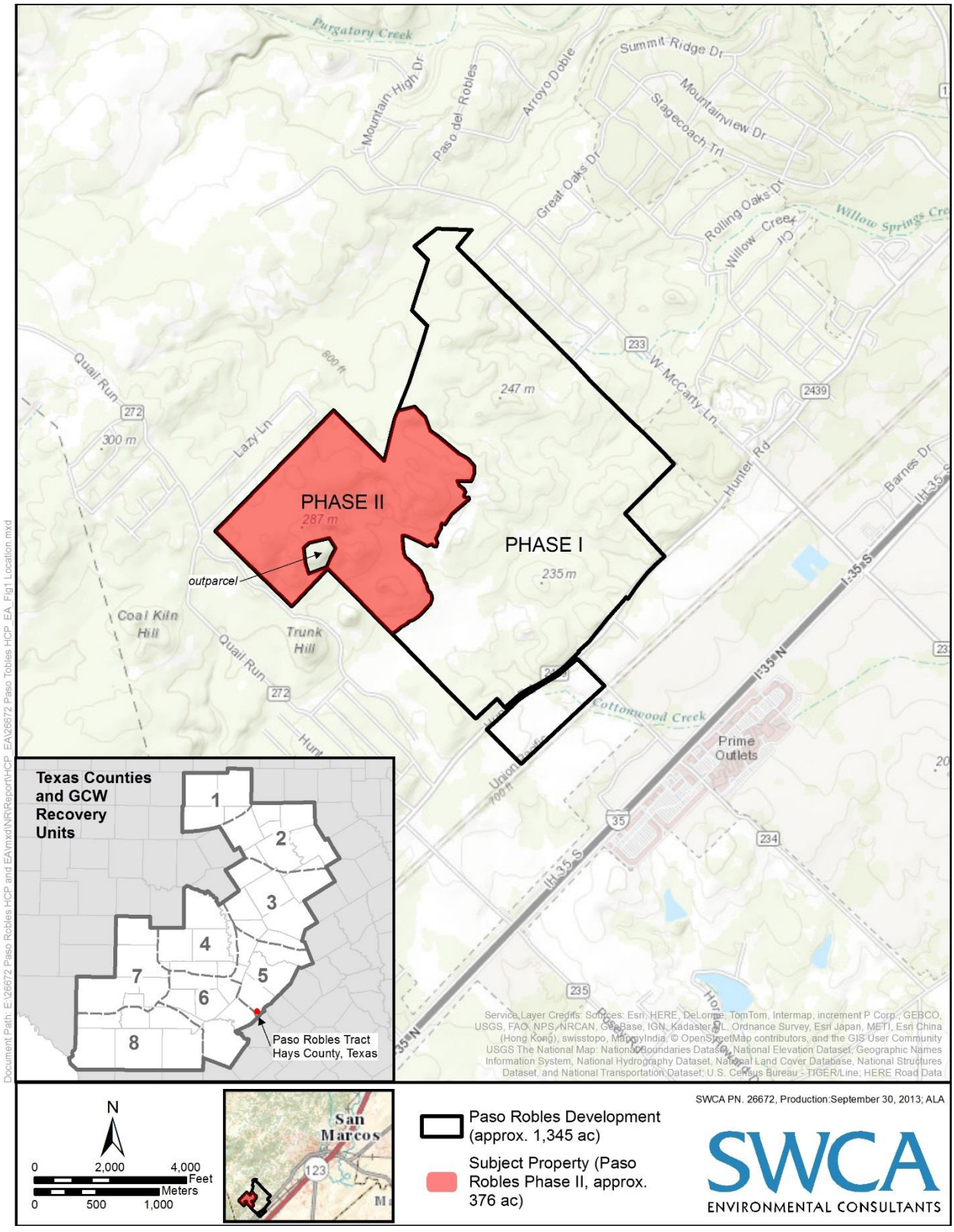

Figure 1. Location of the Subject Property and phases of the Paso Robles Development.

2. PROPOSED PROJECT, PERMIT AREA, AND COVERED ACTIVITIES

2.1. Proposed Project

The Subject Property comprises the western corner of a proposed 1,345-acre mixed use residential development known as the Paso Robles Development (Figure 1). The City of San Marcos approved the Paso Robles Development as a planned development district under Ordinance No. 2010-59 (as amended). The Paso Robles Development is subject to a land use plan and development standards that are legally binding regulations specified by the ordinance. The development's conceptual land use plan features a range of low to medium-density housing, a golf course and other open spaces, neighborhood businesses, commercial uses, and associated infrastructure (Figure 2). Low impact development practices, including the provision of open spaces and the establishment of buffers around on-site water features, are a significant focus of the Paso Robles Development. Open spaces are defined as land uses that are not associated with substantial amounts of impervious cover or buildings and include the golf course, parks, green belts, water quality buffers, and other substantially undeveloped areas within the proposed development (Figure 2).

The 376-acre Subject Property is Phase II of the Paso Robles Development. Figure 2 shows the location of the Subject Property in relation to the Paso Robles Development conceptual land use plan. Note the presence of a small outparcel within the Subject Property that is not included in the proposed Paso Robles Development.

In addition to the ESA, the proposed Paso Robles Development (both phases) will comply with, and in many cases exceed the requirements of, all applicable local, state, and federal regulations. Such regulations that are relevant to this HCP include, but may not be limited to:

- **City of San Marcos Ordinance 2010-59** establishes the Paso Robles Planned Development District as well as the legally binding regulations associated with the approved land use plan and development standards. The ordinance also requires that the development and operation of any golf course within the Paso Robles Planned Development District be in accordance with the standards and requirements of the *Audubon International Signature Program for Gold Courses*, including standards for the application of pesticides and herbicides and for testing of ground water adjacent to any such golf course.

- **City of San Marcos Ordinance 2011-39 and 2011-96** amends the Paso Robles land use plan related to its proposed network of arterial roads.

- **City of San Marcos Land Development Code, Chapter 5 (Environmental Regulations)** specifies robust measures to protect surface and groundwater quality by specifying protective buffers around streams and other sensitive features, establishes impervious cover limits within such buffers and on uplands, and requires the use of best management practices for controlling runoff and other potential pollutants.

- **Texas Commission on Environmental Quality (TCEQ) Edwards Aquifer Protection Program** oversees the protection of Edwards Aquifer resources. The project occurs partially over the recharge zone, transition zone, and contributing zone within the transition zone of the Edwards Aquifer and is subject to compliance with the Edwards Aquifer Protection Program, including the agency's technical guidance on best management practices for construction activities over the aquifer (TCEQ Publication RG-348).

Figure 2. Conceptual land use plan for the 1,345-acre Paso Robles Development.

- **Section 404 of the Federal Clean Water Act** is administered by the U.S. Army Corps of Engineers and regulates the discharge of dredged or fill material into a water of the U.S., which may include ephemeral or intermittent streams and adjacent wetlands.

2.2. Permit Area

The permit area for the proposed ITP includes the extent of the Subject Property (i.e., Phase II of the proposed Paso Robles Development), as shown in Figure 1.

The remaining 969 acres of the Paso Robles Development (i.e., Phase I) is not included in the permit area because the Applicant believes that the proposed development activities outside of the Subject Property are not likely to take any federally listed species.

2.3. Description of Covered Activities

The requested ITP would authorize take of the GCWA associated with the construction and ongoing use of residences, community amenities, neighborhood commercial sites, a golf course, and associated infrastructure within the permit area (the covered activities). Such takings may result from the removal, degradation, or alteration of woodland vegetation used by the GCWA by mechanical means incidental to otherwise lawful land development activities conducted within the boundaries of the Subject Property.

3. SPECIES ADDRESSED BY THE HABITAT CONSERVATION PLAN

3.1. Covered Species: Golden-cheeked Warbler

The GCWA was listed as federally endangered on May 4, 1990, and the Service identifies habitat loss and habitat fragmentation as the primary threats to the species (Service 1992). This federally endangered migratory songbird uses relatively mature and closed-canopy, juniper-oak woodlands in central Texas as breeding habitat during the spring and early summer months. Campbell (2003) provides a description of the GCWA and its habitat.

Aerial imagery shows that vegetation within the Subject Property is generally composed of dense woodland that may be representative of suitable GCWA habitat. Horizon Environmental Services, Inc. (Horizon) performed presence/absence surveys in accordance with Service protocols for the Subject Property annually between 2007 and 2010 (Horizon 2007, 2008, 2009, 2010).

The breeding season surveys performed Horizon reported the following results, which are also depicted on Figure 3:

> Horizon (2007): "Survey results indicate that no GCWs were observed to be utilizing the subject site or immediately surrounding areas during the 21 surveys conducted by Horizon. On April 3rd 2007 one of our surveyors heard a male GCW but determined it was just flying by (transient). Efforts to confirm our negative survey results included the play back of prerecorded GCW vocalizations in all areas during the final (10, 11, 15, and 16 May 2007) surveying efforts."

While surveyors recorded one auditory observation of a GCWA call from the Subject Property, the survey results suggest that this individual did not spend time on the property and indicate that no GCWAs established a breeding territory on the Subject Property during 2007.

> Horizon (2008): "Survey results indicate that there was one GCW male (see picture 1 and 2) utilizing about five acres in section D from April 8th to April 17th (see table 2). The male GCW was observed forging [sic], vocalizing, and flying its territory (Figure 2). Other than the one male there were no other GCWs observed to be utilizing any other areas of the subject site or immediately surrounding areas during the 28 surveys conducted by Horizon. Efforts to confirm our negative survey results included the play back of prerecorded GCW vocalizations in all areas during the final (6, 7, 9, and 12 May 2008) surveying efforts."

The 2008 survey report documents seven recorded locations of one GCWA male within the Subject Property during the 2008 breeding season. The observations were limited to an approximately 5-acre area. These seven locations were recorded on only two of the eight survey visits to the Subject Property. SWCA's experience is that breeding GCWA males tend to vocalize frequently through the survey season, indicating that this male may not have actually established a breeding territory.

> Horizon (2009): "Survey results indicate that there were no GCWs observed to be utilizing any areas of the subject site or immediately surrounding areas during the 15 surveys conducted by Horizon. Efforts to confirm our negative survey results included the play back of prerecorded GCW vocalizations in all areas during the final (27 and 29 April; and 1 May 2009) surveying efforts."

No observations of GCWAs were recorded on any part of the Subject Property in 2009. Since GCWAs tend to utilize the same or similar territories year after year, the results of the 2009 survey provide support for the lack of actual breeding activity on the Subject Property by the male observed the prior year. The lack of recorded occupancy in 2009 could also indicate that the 2008 male was in reality a transient bird that did not fully establish an actual territory that year.

> Horizon (2010): "Survey results indicate that there were 2 GCW males (see picture 1 and 2) utilizing about five acres each in section D and C from April 16th to May 7th (Table 2). The male GCW's were observed forging [sic], vocalizing, and flying about the restricted areas (Figure 2). Behavior exhibited by these two males was consistent with territorial defense. However, other than these two males, there were no other GCWs observed to be utilizing any portions of the subject site or immediately surrounding areas during the 24 surveys conducted by Horizon. No females or fledglings were observed. Efforts to confirm other GCW utilization of the property included the play back of prerecorded GCW vocalizations in all areas during the final (20 April, 3, 5 and 7 May 2010) surveying efforts. No responses to these recorded vocalizations were observed. It is our opinion that these two birds were unpaired, possibly 1st year males."

Horizon reported the presence of two separate male GCWAs on the Subject Property during the 2010 breeding season, documenting observations of one or two GCWAs on nine of the 24 visits to the property. As noted by Horizon, these two GCWAs appeared to vocally defend territories, but neither was observed in the presence of female or juveniles that would suggest successful pairing or reproduction.

Horizon concludes the 2010 survey report with the following assessment:

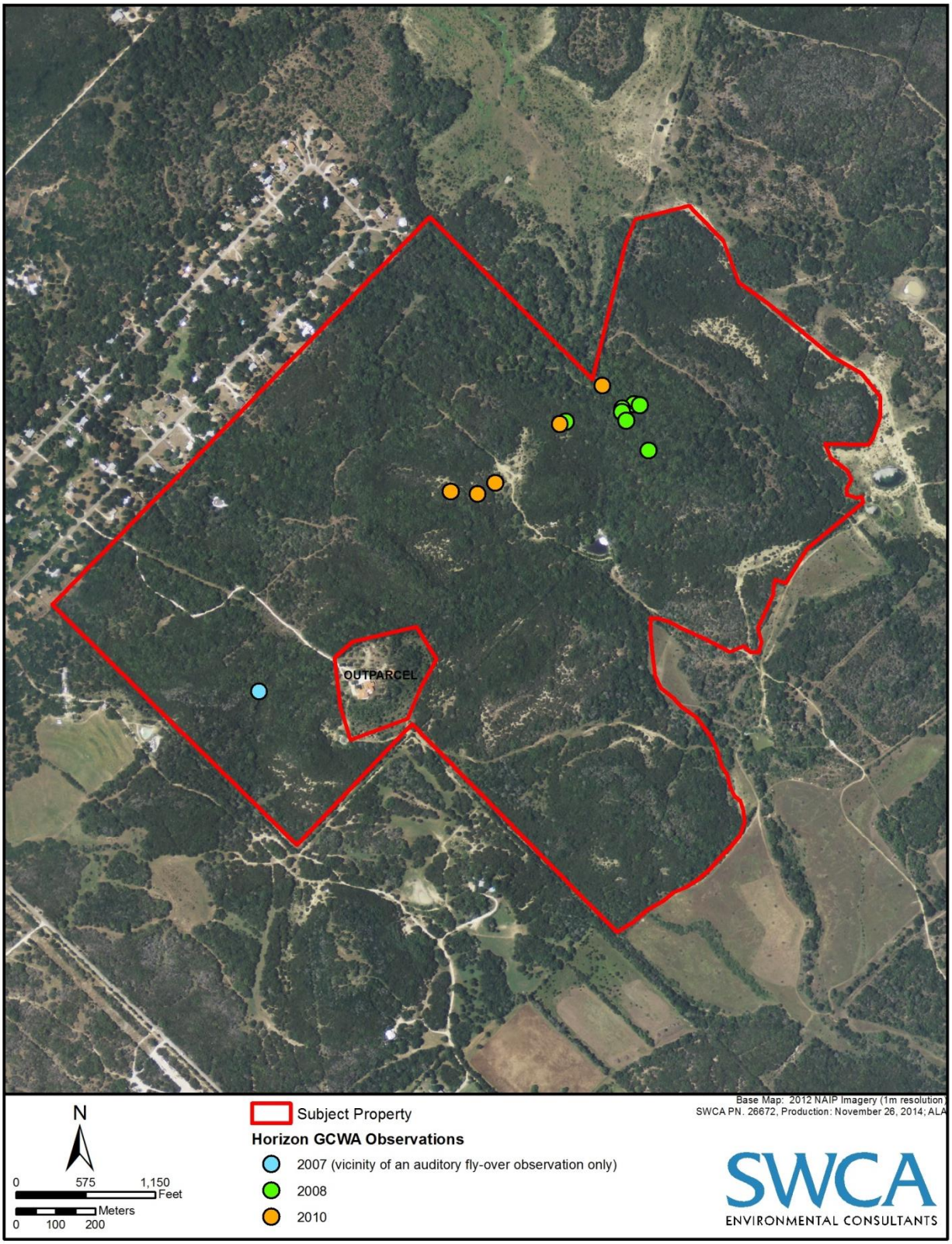

Figure 3. GCWA observations within the Subject Property.

> "The lack of documented nesting activity on the site following four years of consecutive survey efforts continues to document the overall poor habitat quality of the subject site despite the presence of suitable vegetative characteristics and occasional utilization by single male GCWs. We believe this to be due to habitat fragmentation and the generally isolated nature of the on-site habitat areas from other significant blocks of suitable GCW habitat in Hays or Comal counties."

The Horizon surveys, which exceed the level of effort typically requested by Service to document absence from an area of potential habitat, indicate that the Subject Property is neither broadly nor consistently occupied by GCWAs. At most, the Subject Property has been shown to support the feeding and sheltering activities of a maximum of two males, without any documented breeding activity. However, in two of the four years of surveys no GCWAs were documented actively using the Subject Property (although, according to Horizon (2007), we note that one GCWA was observed presumably flying over the Subject Property in 2007). During the two, non-consecutive years when one or two GCWAs were observed within the Subject Property, the area of documented use covered an area of no more than approximately 37 acres of the 376 acres of potential habitat available for GCWA use within the Subject Property. In general, Horizon's professional opinion (provided by Service-permitted biologists) is that the potential GCWA habitat on the Subject Property is of poor quality.

3.2. Other Federally Listed Species

The Service and Texas Parks and Wildlife Department (TPWD) identify 17 species occurring or having the potential to occur in Hays County, Texas, that are federally protected or species that are under consideration for such protection (Table 1) (TPWD 2012, Service 2013). Except for the GCWA, none of the species listed in Table 1 is currently known to occur in the wild within or near (i.e., within two miles of) the Subject Property.

As described in Table 1 and in the following sections, the Applicant has determined that the covered activities not likely, much less reasonably certain, to cause the taking of any federally listed or candidate species except for the GCWA. Therefore, the Applicant is not seeking incidental take authorization for these other federally listed or candidate species.

Table 1. Special Status Species Naturally Occurring in Hays County, Texas

Species Name	Listing Status*	Habitat Characteristics (TPWD 2012)	Likelihood for Incidental Taking from Proposed Project
AMPHIBIANS			
Barton Springs salamander (*Eurycea sosorum*)	FE/SE	Spring outlets and subterranean water-filled caverns of the Barton Springs segment of the Edwards Aquifer	None—Paso Robles is south of a groundwater divide separating the Barton Springs and San Antonio segments of the Edwards Aquifer. Neither surface nor groundwater from the Paso Robles property reaches areas known to support wild populations of the Barton Springs salamander.

Species Name	Listing Status*	Habitat Characteristics (TPWD 2012)	Likelihood for Incidental Taking from Proposed Project
San Marcos salamander (*Eurycea nana*)	FT/ST	Headwaters of the San Marcos River downstream to 0.5 mile past IH 35	Not Likely—Habitat for this species is not known to occur on site. Closest known wild localities are approximately 4 miles from the Paso Robles site. Paso Robles will employ strong water quality protection measures, including robust stream and recharge feature buffers, impervious cover limits, and environmentally sensitive golf course management practices to avoid significant water quality impacts to the species (see Section 3.2.2 for details on water quality protection measures). Furthermore, a recent study indicates that recharge from local surface-water sources does not strongly influence the geochemistry of San Marcos Springs discharge (Musgrove and Crow 2012), due to the dominance of regional groundwater flow.
Texas blind salamander (*Eurycea rathbuni*)	FE/SE	Water-filled subterranean caverns along 6 miles of the San Marcos Spring Fault	Not Likely—Closest known wild occurrence of the species is located more than 2 miles from the Paso Robles site. Paso Robles will employ strong water quality protection measures, including robust stream and recharge feature buffers, impervious cover limits, and environmentally sensitive golf course management practices to avoid significant water quality impacts to the species (see Section 3.2.2 for details on water quality protection measures). Furthermore, a recent study indicates that recharge from local surface-water sources does not strongly influence the geochemistry of San Marcos Springs discharge (Musgrove and Crow 2012), due to the dominance of regional groundwater flow. Therefore, the vast majority of the groundwater flowing along the San Marcos Springs Fault originates from areas far removed from the Paso Robles site.
BIRDS			
Black-capped vireo (*Vireo atricapilla*)	FE/SE	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover	None—Vegetation on Paso Robles is not representative of suitable vireo habitat. Breeding season surveys by Horizon between 2007 and 2010 did not detect the presence of this species.
Golden-cheeked warbler (*Setophaga chrysoparia*)	FE/SE	Closed-canopy juniper-oak woodlands	Known—See Section 3.1 for details.
Sprague's pipit (*Anthus spragueii*)	C	Only present in Texas during migration and winter, mid-September to early April; can be locally common in coastal grasslands, uncommon to rare further west	Not Likely—Grasslands within the Paso Robles property are not native, patch sizes are much smaller than those typically used by the species, and many patches contain scattered trees and shrubs that are not preferred by the species. Therefore, the species is not likely to use the Paso Robles site during migration or wintering.
Whooping crane (*Grus americana*)	FE/SE	Potential migrant throughout most of state to coast	Not Likely—Paso Robles lacks migratory stop-over or feeding habitats.
FISHES			

Species Name	Listing Status*	Habitat Characteristics (TPWD 2012)	Likelihood for Incidental Taking from Proposed Project
Fountain darter (*Etheostoma fonticola*)	FE/SE	Known only from the San Marcos and Comal rivers; springs and spring-fed streams in dense beds of aquatic plants growing close to bottom	Not Likely— No habitat for this species occurs on site. The closest known wild locality is more than 4 miles from Paso Robles. Paso Robles will employ strong water quality protection measures, including robust stream and recharge feature buffers, impervious cover limits, and environmentally sensitive golf course management practices to avoid significant water quality impacts to the species (see Section 3.2.2 for details on water quality protection measures).
San Marcos gambusia (*Gambusia georgei*)	FE/SE	Extinct; endemic; formerly known from upper San Marcos River	None—Species is thought to be extinct.
INSECTS			
Comal Springs dryopid beetle (*Stygoparnus comalensis*)	FE/SE	Found clinging to objects in streams; sometimes found crawling on stream bottoms or along shores	Not Likely—Project area lacks suitable spring habitat and the closest known wild locality is approximately 10 miles from the Paso Robles site. Neither surface nor groundwater from the proposed project is expected to reach known wild localities of this species. In addition, Paso Robles will employ strong water quality protection measures, including robust stream and recharge feature buffers, impervious cover limits, and environmentally sensitive golf course management practices to avoid significant water quality impacts to the species (see Section 3.2.2 for details on water quality protection measures).
Comal Springs riffle beetle (*Heterelmis comalensis*)	FE/SE	Found in Comal and San Marcos Springs	Not Likely— The project site does not include spring habitat for this species and the closest known wild locality is approximately 4 miles away. Paso Robles will employ strong water quality protection measures, including robust stream and recharge feature buffers, impervious cover limits, and environmentally sensitive golf course management practices to avoid significant water quality impacts to the species (see Section 3.2.2 for details on water quality protection measures). Furthermore, a recent study indicates that recharge from local surface-water sources does not strongly influence the geochemistry of San Marcos Springs discharge (Musgrove and Crow 2012), due to the dominance of regional groundwater flow.
MAMMALS			
Red wolf (*Canis rufus*)	FE/SE	Formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies	None—Species is extirpated from Texas.
MOLLUSKS			

Species Name	Listing Status*	Habitat Characteristics (TPWD 2012)	Likelihood for Incidental Taking from Proposed Project
Golden orb (*Quadrula aurea*)	C/ST	Sand and gravel in some locations and mud at others; found in lentic and lotic; Guadalupe, San Antonio, Lower San Marcos, and Nueces River basins	Not Likely— Nearest known live individual is located approximately 25 miles downstream from the Paso Robles site. The proposed project includes strong water quality protection measures that will avoid significant water quality impacts to the species (see Section 3.2.2 for details on water quality protection measures).
Texas fatmucket (*Lampsilis bracteata*)	C/ST	Streams and rivers on sand, mud, and gravel substrates; Colorado and Guadalupe River basins	None—Not known to occur in the San Marcos River basin. The confluence with the Guadalupe River is approximately 40 miles from the Paso Robles site.
Texas pimpleback (*Quadrula petrina*)	C/ST	mud, gravel and sand substrates, generally in areas with slow flow rates; Colorado and Guadalupe river basins	Not Likely— Suspected habitat may occur more than 5 miles from the project site. Paso Robles will employ strong water quality protection measures, including robust stream and recharge feature buffers, impervious cover limits, and environmentally sensitive golf course management practices to avoid significant water quality impacts to the species (see Section 3.2.2 for details on water quality protection measures).
PLANTS			
Bracted twistflower (*Streptanthus bracteatus*)	C	Shallow, well-drained gravelly clays and clay loams over limestone in oak juniper woodlands and associated openings, on steep to moderate slopes and in canyon bottoms; several known soils include Tarrant, Brackett, or Speck over Edwards, Glen Rose, and Walnut geologic formations	Not Likely—Subject Property lacks mesic canyons or steep drainages that would provide habitat for this species.
Texas wild-rice (*Zizania texana*)	FE/SE	Endemic to Texas; spring-fed river, in clear, cool, swift water usually less than 1 meter deep, with coarse sandy soils.	Not Likely—No habitat for this species occurs on site and the closest known wild locality is located more than 4 miles from the property. Paso Robles will employ strong water quality protection measures, including robust stream and recharge feature buffers, impervious cover limits, and environmentally sensitive golf course management practices to avoid significant water quality impacts to the species (see Section 3.2.2 for details on water quality protection measures).

Texas Parks and Wildlife Department (TPWD). Annotated county lists of rare species – Hays County. Last revision: October 2, 2012.

* FE = Federally Endangered; FT = Federally Threatened; C = Federal Candidate for Listing; SE = State Endangered; ST = State Threatened

3.2.1. Captive Populations of Federally Listed Aquatic Species

The Service operates a national fish hatchery (the San Marcos Aquatic Resource Center) located approximately 1 mile southeast of the Subject Property and maintains captive populations of some federally listed aquatic species at this site. The Service currently uses water drawn from two wells located near the site of the fish hatchery to house and propagate these animals. At a meeting with the Applicant in December

2012, the Service expressed concern about the potential for the proposed project to degrade the quality of water used at the fish hatchery.

The wells are located over the Edwards Aquifer Transition Zone approximately one mile from the northeast corner of the Subject Property. Groundwater studies in the region indicate that the dominant flow of groundwater in the vicinity of the Subject Property moves to the northeast, towards San Marcos Springs (Johnson et al. 2012, Musgrove and Crow 2012). These studies suggest that any groundwater infiltrating the aquifer within or near the limits of the Subject Property may travel to the northeast.

While there is a potential for recharge originating from the Subject Property to appear in the fish hatchery wells, the contribution of any such recharge to the quality or quantity of water pumped from these wells is likely to be negligible to minor. The Subject Property occurs over areas that do not directly recharge to the aquifer. Stormwater from these areas primarily collects in surface streams and flows east across the Edwards Aquifer Transition Zone where it exits the aquifer system just east of the property boundary. Therefore, there is little opportunity for rainfall incident on the Subject Property to enter the aquifer at a point where discharge to the fish hatchery wells is likely. Furthermore, the wells lie along the San Marcos Springs and Comal Springs Faults, an area that transmits a high volume of groundwater predominantly sourced from regional recharge originating from counties west of San Antonio. The U.S. Geological Survey released a study in 2012 (Musgrove and Crow 2012) indicating that recharge from local surface water sources in the San Marcos area does not strongly influence the geochemistry of San Marcos Springs discharge, which are located approximately 4 miles from the fish hatchery wells. Discharge from the San Marcos Springs appears to be dominated by regional recharge even during wet hydrologic conditions when local recharge to the aquifer is greatest (Musgrove and Crow 2012). Therefore, most of the water pumped from the fish hatchery wells is also likely to be regionally sourced and not locally sourced. Given the likely minor contribution to aquifer recharge from the Subject Property to the volume of water pumped from the fish hatchery wells and the strong water quality protection measures to be applied to the future development within the Subject Property described in the following section, the covered activities are not likely to cause a material, or even detectable, change in water chemistry at the fish hatchery wells.

3.2.2. Protection Measures for Federally Listed Aquatic Species

In consideration of the known distribution and ecology of the species listed in Table 1 and the characteristics of the groundwater system in the local vicinity, the Applicant believes that its water quality protection measures are reasonably certain to avoid taking any federally listed or candidate aquatic species, either in the wild or those housed in captivity at the San Marcos Aquatic Resource Center. These water quality protections, described in more detail in the following and in Appendix A, include robust stream buffers and sensitive karst feature buffers, impervious cover limits, and best management practices that meet or exceed both TCEQ and City of San Marcos regulatory standards. Implementation of these water quality protection measures is required by a combination of local, state, and federal regulations and are, therefore, not discretionary.

While the standard TCEQ Edwards Rules do not specify stream buffers, the Applicant has adopted the stream buffer zone limits described in the TCEQ's *Optional Enhance Measures for the Protection of Water Quality in the Edwards Aquifer (Revised)* (Figure 4). The stream buffer zones contemplated in the Optional Enhanced Measures vary from 300 feet to 25 feet from the centerline of the stream, depending on the size of the drainage basin, as follows:

- Streams draining 640 acres (one square mile) or greater should have a minimum buffer of 300 feet from the centerline on each side of the stream.

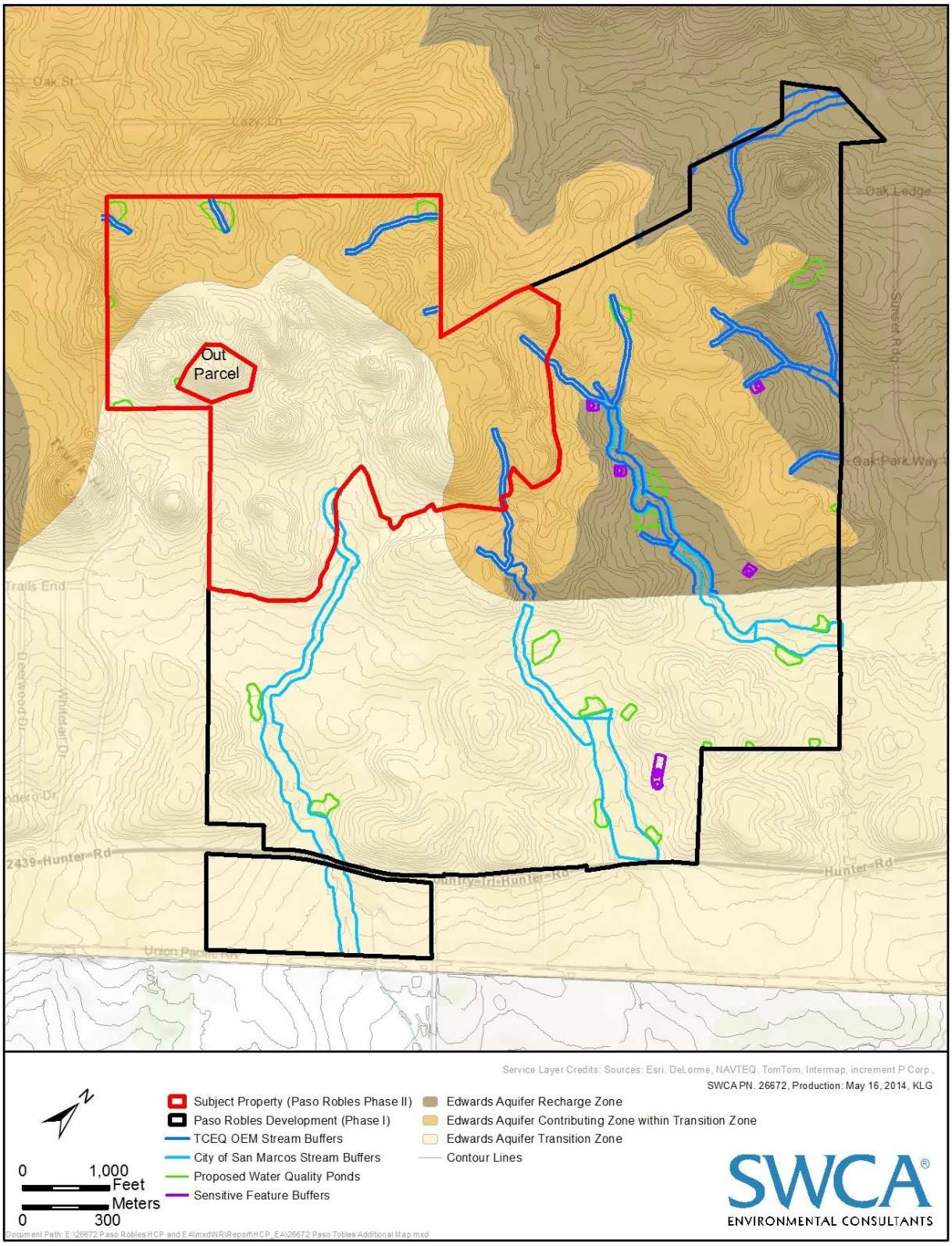

Figure 4. Water Quality Buffer Zones

- Streams draining less than 640 acres but 320 or more acres should have a minimum buffer of 200 feet from the centerline on each side of the stream.

- Streams draining less than 320 acres but 128 or more acres should have a minimum buffer of 100 feet from the centerline on each side of the stream.

- Streams or swales draining less than 128 acres but 40 or more acres should have a minimum buffer of 50 feet from the centerline on each side of the drainage.

- Streams or swales draining less than 40 acres but 5 or more acres should have a minimum buffer of 25 feet from the centerline on each side of the drainage.

These buffers are intended to help "filter overland flow from adjacent development," reduce erosion, and stabilize stream channels. The Optional Enhanced Measures stream buffer zone limits to be used within the Subject Property exceed what is required by the City of San Marcos. While the Applicant has voluntarily adopted the stream buffers zone widths recommended in the Optional Enhanced Measures, the allowable land uses within these buffer zones will conform to the City of San Marcos standards for activities that may be conducted within stream buffers. Overall, the low-impact land plan for the Subject Property features approximately 75 acres of open space (approximately 20 percent of the total Subject Property). Figure 2 shows the open spaces within the Paso Robles Development land plan.

A Watershed Protection Plan, in accordance with the regulations of the City of San Marcos, was prepared for the Paso Robles Development, including the Subject Property, and was approved by the City of San Marcos Planning and Zoning Commission in July 2010. This Watershed Protection Plan demonstrates compliance with the environmental and flood control standards contained in Chapter 5 of the City of San Marcos Land Development Code for a conceptual land development design. The Watershed Protection Plan also provides assurances that such standards will be met at the time of development of the property by establishing terms and conditions for approval of applications for plats and Site Preparation Permits.

With respect to the golf course, Paso Robles is legally required by City of San Marcos Ordinance 2010-59 to implement the standards for certification through the *Audubon International Signature Program for Gold Courses*. This program is an award winning education and certification program that helps golf courses protect the environment and minimize potentially harmful impacts of golf course operations (Audubon International 2013). Water quality and quantity protection measures addressed in this certification program include, but are not limited to, the following (Audubon International 2013):

- Eliminate/mitigate erosion to water bodies, such as streams, lakes, and ponds.

- Employ environmentally-sensitive plant management techniques within 25 feet of water bodies and well heads to minimize nutrient and chemical inputs, including the designation of "no spray" zones, use of spot treatments, designating higher thresholds for pest problems, using covered booms, and taking the weather into account prior to application.

- Raise mowing heights along in-play shorelines to slow and filter runoff.

- Reduce the potential for nutrient loading to water bodies by employing BMPs, such as using slow-release fertilizers, spoon feeding, and filtering drainage through vegetative or mechanical filters prior to entering water bodies.

- Maintain, clean, store, handle, and dispose of all equipment and chemicals (including pesticides and fertilizers) in a manner that eliminates the potential for on-site or off-site contamination of water bodies.

- Reduce/eliminate the need for chemical algae control in ponds through proper aeration, nutrient reduction, bio-filters, vegetation management, or bio-controls.

- Visually monitor water bodies for water quality problems, such as erosion, algae, aquatic "weed" growth, fish kills, sediment buildup, etc., as part of regular Integrated Pest Management scouting activities.

- Report water quality problems immediately to supervisors and, if required, regulatory agencies for appropriate action.

- Establish baseline data for representative water bodies and water sources that may be adversely affected by golf course operations. Re-rest at least one time per year, or sooner if problems occur. Keep written records of monitoring activities, results, and control measures taken if needed.

To reduce dependence on the City of San Marco's potable water supply, the Applicant will use treated effluent from the City of San Marcos' Waste Water Treatment Plant to irrigate the proposed golf course and other common open spaces within the Subject Property.

Except for the GCWA, the terrestrial species listed in Table 1 are also not expected to occur within or near the Subject Property due to a lack of appropriate habitat within the Paso Robles Development and are not likely to be taken by the covered activities Therefore, the Applicant is not seeking incidental take authorization for any of these other species.

The Applicant has determined that the proposed covered activities within the Subject Property are not likely, much less reasonably certain, to result in take of any species that are currently listed as threatened or endangered, or species that are currently considered candidates or proposed for such listing, except for the GCWA. As such the Applicant is not seeking incidental take authorization for species other than the GCWA. Furthermore, Service has determined that the proposed project would not adversely modify any designated critical habitat for federally listed Edwards Aquifer species (Service 2011).

4. INCIDENTAL TAKE AND IMPACTS

4.1. Incidental Take Request

Despite the presence of approximately 376 acres of juniper-oak woodland across the Subject Property, multiple years of breeding season surveys demonstrated that only a small fraction of this habitat is actually used by the species in any given year (see Section 3.1).

The GCWA breeding season presence/absence surveys conducted between 2007 and 2010 indicate that the Subject Property is neither broadly nor consistently occupied by the species (Horizon 2007, 2008, 2009, 2010). At most, the Subject Property has been shown to support the feeding and sheltering activities of a maximum of two males, without any documented breeding activity. However, in two of the four years of surveys no GCWAs were documented using the Subject Property. During the two, non-consecutive years when one or two GCWAs were observed, the area of documented use involved no more than approximately 36.5 acres of the 376 acres of potential habitat within the Subject Property. In general, Horizon's

professional opinion (provided by Service-permitted biologists) is that the potential GCWA habitat on the Subject Property is of poor quality (Horizon 2010).

Nevertheless, for the purposes of this analysis, the Applicant assumes that the 376 acres of poor quality, potential GCWA habitat within the Subject Property is utilized by two GCWA males defending territories.

Groce et al. (2010) provides the following summary of GCWA territory sizes:

> "The average territory size based on spot-mapping and minimum convex polygon estimates ranged from 2.77–23.15 ha (6.84–57.20 ac; n = 622) in Travis County depending on habitat characteristics (Coldren 1998; see Chapter 5). Another study in Travis County estimated territory sizes of 0.48–7.27 ha (1.19–17.96 ac; n = 92), with averages of 1.19–2.47 ha (2.94–6.10 ac) depending on site characteristics (Davis and Leslie 2008; see Chapter 5). Additional research on territory mapping and estimates of territory size has occurred in recent years in Real, Kinney, and Edwards Counties, Fort Hood, and private lands around Fort Hood, but related reports and data were unavailable at the time of this writing."

Therefore, the maximum estimated territory size for a GCWA reported in the available literature appears to be 57.2 acres[2].

While the Horizon surveys documented GCWAs utilizing an area of only 36.5 acres within the Subject Property, for the purposes of this analysis we assume that each of the two GCWAs observed in 2010 actually utilized an area of 57.2 acres (i.e., the maximum territory size reported in the literature). Therefore, the assumed area of occupied habitat within the Subject Property may be calculated as 2 territories x 57.2 acres = 114.4 acres.

Arnold et al. (1996) showed that GCWAs consistently occupied and reproduced in habitat patches of at least 57 acres. Butcher et al. (2010) found evidence of a minimum patch size threshold of reproductive success for GCWAs between 37 acres and 50 acres, but found no minimum patch size thresholds for species presence, territory establishment by males, or pair formation among the habitat patches studied. If the 114.4 acres of assumed occupied habitat was configured as an independent patch of habitat, the patch would exceed the minimum patch size thresholds reported in the literature and could be independently functional for the species. This is particularly true if this assumed occupied habitat is not actually used for breeding purposes, which has not been documented.

This analysis considers the remaining 261.6 acres of potential habitat within the Subject Property as being unoccupied by the GCWA and not necessary to support the viability of the 114.4 acres of assumed occupied habitat. As this remaining habitat has had no documented occupancy and the assumed 114.4 acres of occupied habitat exceeds the minimum patch size reported in the literature as being necessary to consistently support occupancy and reproduction by GCWAs, this unoccupied habitat does not appear to be contributing to the status of the GCWA.

The Applicant requests incidental take authorization associated with the loss or degradation of 114.4 acres of assumed occupied GCWA habitat that may harm as many as two, non-breeding GCWA males.

[2] To avoid confusion, we note that estimates of territory density are not equivalent to estimates of territory size, since GCWAs: 1) do not always saturate (i.e., fully occupy or make use of) available habitat areas; and 2) the territories of adjacent individuals sometimes overlap.

4.2. Impacts of the Requested Taking

The Applicant concludes that the expected impacts of the proposed incidental taking on the GCWA would be relatively minor with respect to the status of the species in a local, regional, or range-wide context. The Applicant's rationale for this conclusion is based on: 1) the habitat within the Subject Property is of marginal value to the species as indicated by the apparent low and inconsistent occupancy and lack of breeding activity by the species; 2) the proposed covered activities will be confined to the non-breeding season when the GCWA is not present on the property, thereby avoiding direct effects to individual GCWAs; and 3) only a very small number of GCWA individuals are likely to be affected by the loss or modification of habitat within the Subject Property. These points are further clarified in the following discussion.

Surveys indicate that the Subject Property supports no more than one or two territorial GCWA males in any given year, and in some years the Subject Property appears to not have been occupied at all. Breeding activity, indicated by the presence of female GCWAs or fledged juveniles, has not been detected within the Subject Property during any of the four years of surveys by Horizon. By observing seasonal clearing restrictions, the Applicant will avoid the potential for directly killing or wounding the GCWAs that might otherwise be present within or adjacent to the Subject Property when vegetation is being cleared or modified. Any GCWAs that may have previously used habitats within the Subject Property will have the opportunity to find replacement feeding and sheltering habitats elsewhere in the area. GCWA habitat models indicate that potentially suitable habitat for the species is widely available in Hays County and elsewhere in GCWA Recovery Regions 5 and 6 (Loomis Partners 2009, Diamond 2010, Morrison et al. 2010).

The *Hays County Regional Habitat Conservation Plan* (Loomis Partners et al. 2010) estimates that approximately 170,355 acres of potentially suitable GCWA habitat occur in Hays County, with approximately 60 percent of this habitat predicted to be of relatively high or moderate quality and likely to be used by the species. The loss of approximately 114.4 acres of occasionally occupied GCWA habitat on the Subject Property represents 0.06 percent of the potentially suitable GCWA habitat in Hays County.

It is possible that the displaced individuals may still be able to conduct essential feeding, sheltering, and possibly even breeding activities in replacement habitats with the same or even improved levels of success. The opportunity for displaced GCWA individuals to successfully relocate to other habitats reduces both the likelihood and the magnitude of potentially adverse impacts to the species resulting from the covered activities, since essential behaviors ultimately may not be significantly impaired.

Even if the individual GCWAs using the Subject Property were to ultimately die as a result of the covered activities, the loss of perhaps two non-breeding GCWA individuals is insignificant compared to the estimated size of the current population of the species. SWCA (2007) provides estimates of the GCWA population at a county (919 adult males in Hays County), regional (3,815 adult males in Hays, Travis, Williamson, and Burnet counties), and range-wide scale (20,000 to 27,000 adult males range-wide). Two individual GCWAs represent approximately 0.22 percent, 0.05 percent, and 0.01 percent of the estimated populations, respectively. Other recent studies estimated that the range-wide population of singing GCWA males includes 220,615 individuals (Morrison et al. 2010), whereby two GCWA males would represent less than 0.0009 percent of the estimated male population.

Overall, the Applicant believes that the loss or degradation of 114.4 acres of occasionally occupied juniper-oak woodland, where seasonal clearing restrictions avoid opportunities for directly killing or wounding individuals, and where an abundance of GCWA habitat in the vicinity offers ample opportunity for displaced individuals to successfully engage in a similar range of essential behaviors is unlikely to result in more than minor adverse impacts to the species.

5. CONSERVATION PROGRAM

Applicants for an ITP must demonstrate to the Service that they will "minimize and mitigate the impacts of the taking to the maximum extent practicable" (16 USC 1539). When determining whether or not an applicant has met this statutory issuance criteria, Service typically considers both the adequacy of the proposed conservation measures and whether or not the proposed measures are the maximum that can be practically implemented by the applicant (Service and NMFS 1996).

5.1. Biological Goals and Objectives

The biological goals and objectives of this HCP are: 1) to avoid directly taking GCWAs by conducting covered activities during periods when the species is not present in the area; 2) to minimize potential indirect habitat effects by taking steps to prevent the spread of oak wilt; and 3) to mitigate for the loss or degradation of apparently marginal, sparsely, and only occasionally occupied GCWA habitat within the Subject Property to the maximum extent practicable and commensurate with the level of impact to the species by securing GCWA habitat with long-term conservation value to the species elsewhere.

To achieve these goals and objectives, the Applicant proposes to implement the conservation measures described in the following sections.

5.2. Seasonal Clearing Restrictions

The Applicant will refrain from conducting woody vegetation clearing within the Subject Property during the GCWA breeding season, defined as March 1 through July 31, to avoid directly impacting GCWAs that may be using habitat within the Subject Property. This seasonal restriction may be lifted for areas where a breeding season survey, conducted during the same breeding season as the proposed clearing in accordance with Service protocols, demonstrates that the vegetation clearing would not occur within 300 feet of occupied habitat. Construction activities may occur during the breeding season in areas that have been cleared.

5.3. Oak Wilt Prevention

During the conduct of covered activities, the Applicant will direct its contracted work crews to follow the Texas Forest Service or professional arborist's guidelines for the prevention of oak wilt. The Texas Forest Service recommends eliminating diseased red oaks, handling firewood properly, and painting wounds on healthy oaks to prevent the spread of oak wilt. According to the Texas Forest Service, all wounding of oaks (including those caused by trimming, limbing, and pruning) should be avoided from February through June. The least hazardous periods for trimming are during the coldest days in midwinter and extended hot periods in mid- to late summer. Regardless of season, all trimming cuts or other wounds to oak trees, including freshly-cut stumps and damaged surface roots, should be treated immediately with a wound or latex paint to prevent exposure to contaminated insect vectors.

5.4. Conservation of GCWA Habitat

Prior to the initiation of covered activities, the Applicant will provide for the protection and on-going management and monitoring of 114.4 acres of off-site GCWA habitat as mitigation for the impacts of the requested taking of 114.4 acres of assumed occupied GCWA habitat. The proposed 1:1 mitigation ratio is appropriate given the apparent poor quality of the habitat and available data that provides no indication that this habitat is used for breeding activities. A 1:1 mitigation ratio is also consistent with the standard

mitigation ratio approved by Service for the Hays County Regional Habitat Conservation Plan. The Applicant proposes to implement this mitigation through the purchase of 114.4 GCWA conservation credits from an approved third-party conservation bank.

Conservation banks have been approved by the Service to provide mitigation for projects that occur within their service areas. The Service' standards for conservation banks ensure that the quality of this off-site mitigation is high and provides long-term value to the target species (see Service 2003). By purchasing credits from a qualifying third-party conservation bank, the Applicant would fulfill this component of its proposed mitigation without further involvement.

The Applicant will purchase up to 114.4 GCWA conservation credits from a Service-approved conservation bank. The chosen bank will either have a service area that includes the Subject Property or, if the bank's service area does not include the Subject Property, the Applicant may seek special Service approval to purchase credits from an out-of-service area bank. The Service indicated that approval of an out-of-service area transaction would not be unreasonably withheld (Tanya Sommer, Service, personal communication to Amanda Aurora, SWCA, via telephone conversation on October 29, 2014). The Applicant will purchase any such credits prior to any take authorized by the requested ITP.

The Hickory Pass Ranch Conservation Bank, operating in Burnet County and approved by the Service in 2002, currently offers GCWA conservation credits within a service area that includes a portion of Hays County (although, the service area stops short of the Subject Property). Currently, Hickory Pass Ranch Conservation Bank is the only operating conservation bank with a Service Area that includes even a portion of Hays County. The fees to purchase these credits are estimated at $5,500 per credit (Hartman 2013); although the credit fee charged by the Bank is subject to change. With Service Approval, the Applicant could purchase up to 114.4 GCWA credits from the Hickory Pass Ranch Conservation Bank, which would cost $629,200 based on the expected per credit fee.

Other suitable conservation banks may become available prior to the start of covered activities and could also provide GCWA conservation credits for the Applicant. The Applicant is not obligated to purchase credits from any one bank. The conservation bank associated with the Hays County Regional Habitat Conservation Plan may be one such future option with credits ranging from $5,000 to $10,000 per credit. At these credit prices, the estimated cost to purchase 114.4 conservation credits could range from $572,000 to $1,144,000.

In any case, any Service-approved conservation banks would be expected to provide high quality habitat that is permanently protected, managed, and monitored for the long term benefit of the species.

5.5. Adaptive Management

The Service published the final "five-point policy guidance" on June 1, 2000, as an addendum to the HCP Handbook (Service and NMFS 2000). This policy established the Service's intent, where appropriate, to include adaptive management principles in the operating conservation program for an HCP to address uncertainty regarding natural resource management. For this conservation program, adaptive management will be the responsibility of the Service-approved third-party conservation bank providing GCWA conservation credits to the Applicant.

6. FUNDING PLAN

The Applicant must assure the Service that adequate funding is available to implement the HCP as one of the criteria for ITP issuance. The Applicant anticipates that the total cost to fulfill the mitigation

requirements may range in price from approximately $572,000 to $1,144,000, based on the range of GCWA conservation credit prices currently offered by existing or anticipated conservation banks in the region. Since the Applicant commits to purchasing 114.4 GCWA conservation credits prior to conducting covered activities within the Subject Property, the Applicant demonstrates that the funding will be available to implement the conservation program in advance of any authorized taking. If for some reason the funding is not available to implement the conservation program, the taking would not occur.

The Applicant acknowledges the range of likely credit fees associated with GCWA conservation banks and is prepared to purchase an appropriate number of GCWA conservation credits to fulfill the mitigation described in the conservation program, if needed. As such, the Applicant provides the necessary financial assurances that funding will be available to implement the proposed conservation program.

Additionally, the Applicant will minimize potential GCWA impacts by conducting initial clearing activities during periods when the species is not present in the area and by taking steps toward preventing the spread of oak wilt. Implementation of these minimization measures will be funded by the Applicant. Costs to implement these measures are expected to be minimal since the measures involve only adjustments of project timing and methods.

7. PERMIT AND PLAN DURATION

The Applicant is seeking a renewable ITP from Service with a term of 10 years from the date of issuance. The requested permit term should be sufficient to implement the conservation program and complete the covered activities. However, in the event that the covered activities have not been completed before the expiration of the permit, the Applicant may request a renewal to extend the duration of the permit. To request a permit renewal, the Applicant must:

1. Have complied with the terms and conditions of the original permit, including reporting requirements;

2. File a written request for a permit renewal with the Service at least 30 days prior to the permit expiration date that references the permit number;

3. Certify that all statements and information presented in the original permit application are still correct or include a list of changes; and

4. Provide specific information concerning the amount of incidental take has occurred under the original permit and the amount of incidental take that remains unused.

If the Applicant files such a request at least 30 days prior to the permit expiration date, then the permit will remain valid while the request is being processed. If the Applicant fails to file a request at least 30 days prior to permit expiration, then the permit will become invalid on the original expiration date.

8. REPORTING AND COORDINATION

The Applicant will notify the Service in writing to the Austin Ecological Services Field Office of the initiation of covered activities at least 10 business days prior to the start of work. With the notification, the Applicant will acknowledge that vegetation clearing will not occur during the period of March 1 through July 31 and that work crews have been instructed to observe oak wilt prevention practices. At this time, the Applicant will provide the Service with proof that the conservation measures proposed in Section 5.4 have been completed.

9. NO SURPRISES POLICY AND ASSURANCES

9.1. Changed Circumstances

Under the No Surprises Rule (63 FR 8859, codified at 50 CFR 17.22, 17.32, 222.2), the Service assures incidental take permittees that, so long as an approved HCP is being properly implemented, no additional land use restrictions or financial compensation will be required of the permittee with respect to the covered species (in this case, the GCWA). These assurances hold even if unforeseen circumstances arise after the permit is issued, indicating that additional mitigation is needed. To the extent that changed circumstances are provided for in the habitat conservation plan, the permittee must implement the appropriate measures in response to the changed circumstances if and when they occur. The No Surprises Rule defines "changed circumstances" as "circumstances affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by plan developers and the Service and that can be planned for (e.g., the listing of new species, or a fire or other natural catastrophic event in areas prone to such events)."

The Applicant and the Service agree that a changed circumstance will have occurred if, at the time the Applicant wishes to begin implementation of the covered activities, GCWA conservation credits from a Service-approved conservation bank with a Service area covering the Subject Property are not available for purchase. The Applicant will notify the Service in writing if it finds that this circumstance has occurred and will request additional coordination with the Service to obtain authorization for another appropriate form of mitigation. Service will consider alternate forms of mitigation and, if consistent with the scope and intent of the original mitigation proposal, approval for an alternate form of mitigation will not be unreasonably withheld. While the Applicant believes that these alternative mitigation options would fulfill the requirement to minimize and mitigate the impacts of the requested taking to the maximum extent practicable, they may not explicitly contribute to the recovery of the species. However, the HCP Handbook states that "even smaller HCPs can be said to contribute to recovery to the extent that individually or collectively they provide for dependable conservation actions and long-term biological protections" (Service and NMFS 1996). The *HCP Handbook* also affirms that "flexibility is needed in addressing the unique circumstances often associated with small landowners and small-scale, low-effect HCPs" (Service and NMFS 1996).

The Applicant also acknowledges the circumstance where after permit issuance, but before vegetation clearing, the GCWA habitat within the Subject Property is destroyed by wildfire, drought, or flood. In this circumstance, the Applicant will withdraw the permit. If the Applicant already purchased GCWA conservation credits as described in the conservation program, the Applicant may seek to return the purchased but unused credits to the third-party conservation bank, may reserve the unused credits for another use, or may sell the unused credits to another party for use as GCWA mitigation.

If additional conservation or mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in this HCP, the Service will not require any conservation or mitigation measures in addition to those provided for in this HCP without the consent of the Applicant, provided that this HCP is being properly implemented.

9.2. Unforeseen Circumstances

"Unforeseen circumstances" are changes in circumstances affecting a species or geographic area covered by a habitat conservation plan that could not reasonably have been anticipated by plan developers and the Service at the time of the conservation plan's negotiation and development, and that result in a substantial and adverse change in the status of any covered species. The Service will have the burden of demonstrating that unforeseen circumstances exist and must base the determination on the best scientific and commercial

data available. The Service shall notify the Applicant in writing of any unforeseen circumstances the Service believes to exist.

The No Surprises Rule states that the Service may require additional conservation measures of an incidental take permittee as a result of unforeseen circumstances "only if such measures are limited to modifications within conserved habitat areas, if any, or to the conservation plan's operating conservation program for the affected species, and maintain the original terms of the conservation plan to the maximum extent possible." The Service shall not require the commitment of additional land, water, or financial resources by the permittee without the consent of the permittee, or impose additional restrictions on the use of land, water, or other natural resource otherwise available for use by the permittee under the original terms of the ITP. No Surprises assurances apply only to the species adequately covered by the habitat conservation plan (i.e., the GCWA), and only to those permittees who are in full compliance with the terms of their plan, permit, and other supporting documents, as applicable.

10. ALTERNATIVE ANALYSIS

Section 10(a)(2)(A) of the ESA requires that habitat conservation plans include a description of the "alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized."

10.1. No Take Alternative

Under a no take alternative, the Applicant would not seek an ITP under Section 10(a) of the ESA. The Applicant would not remove or degrade habitat that would result in an incidental taking of the GCWA. For the purposes of this analysis, the no take alternative is assumed to be equivalent to a "no build" alternative, at least in the short term, meaning the Subject Property would not be developed and habitats used by the GCWA would not be directly altered by the Applicant's activities.

However, given the sparse and only occasional occupancy of the Subject Property by GCWAs and apparent lack of GCWA breeding activities within the property, it is uncertain whether the Subject Property would continue to support the species in the future. It is possible that development of the Subject Property could proceed in the future without the likelihood, much less reasonable certainty, of taking the GCWA, if monitoring demonstrates that the species discontinues using this habitat. The Applicant expects that given the already marginal quality of the habitat and the increasing levels of disturbance in the general vicinity, that the GCWA will eventually discontinue using the Subject Property. At this point, the Applicant would be free to develop the property without risking a violation of the ESA or providing mitigation for incidental take.

This alternative was not chosen because it does not provide sufficient certainty with respect to the timing of the Applicant's desired activities, even though the Applicant would likely be spared the mitigation costs. The no take alternative would not provide any benefits described in the proposed conservation program.

10.2. Reduced Take Alternative

Under a *reduced take* alternative, the Service would issue an ITP for take of the GCWA associated with covered activities conducted within a reduced development footprint. Development activities within the Subject Property would be modified to avoid approximately 57 acres of GCWA habitat within the Subject Property that encompasses the GCWA observations documented in the 2008 and 2010 breeding season surveys. This avoided patch of habitat would meet the minimum patch size documented in the literature as being necessary to provide for consistent occupancy and reproduction by GCWAs (Arnold et al.1996,

Butcher et al. 2010). This revised development plan would reduce the anticipated extent of direct habitat loss by 57.4 acres (likely corresponding to the amount of habitat needed to support one male GCWA) and therefore reduce the amount of incidental take authorization by approximately one-half.

This alternative was not chosen because the conservation of these 57 on-site acres is not likely to provide significant value to the Applicant's proposed development plans and it would not provide as much conservation benefit to the species as the purchase of additional GCWA conservation credits.

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APPENDIX A

PASO ROBLES, HAYS COUNTY, TEXAS: MEASURES TO PROTECT ENDANGERED SPECIES LOCATED IN SAN MARCOS SPRINGS (MURFEE ENGINEERING CO., INC.)